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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,096	07/02/2003	Joo-Won Lee	SAM-0429	3427

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EXAMINER	
NADAV, ORI	

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/612,096	LEE ET AL.	
	Examiner	Art Unit	
	ori nadav	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed limitation of a length of the electrode lines is greater than a length of conventional electrode lines by a predetermined length, as recited in claim 2, is indefinite because "a second length of conventional electrode " is not a definite length thus rendering the claim unascertainable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ejiri (6,770,974) in view of Applicant Admitted Prior Art (AAPA).

Ejiri teaches in figure 13 and related text an electrode line structure of a semiconductor device comprising:

a semiconductor substrate 10, and

an electrode line 18 formed on the semiconductor substrate, the electrode line having an inclined outer end in the long axis direction;

wherein the electrode line includes a first line unit 18b, which substantially functions as an electrode line, a second line unit 18c, which includes the inclined outer end in the long axis direction and which is separated from the first line unit by a predetermined distance, and an insulating plug 24, which is interposed between the first line unit and the second line unit and electrically insulates the first line unit from the second line unit, an upper surface of the second line unit being of uniform height above the substrate between the insulating plug and the inclined outer end.

Ejiri does not disclose that the device comprises plurality of electrode lines.

AAPA teaches in figure 1B plurality of electrode lines 20 having inclined ends.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use plurality of electrode lines in Ejiri's device in order to use the device in a practical application.

Regarding claims 2 and 3, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the length of the electrode lines greater than a length of conventional electrode lines by a predetermined length and the insulating plug is formed at a predetermined

position of each of the electrode lines such that the first line unit has the ordinary length in Ejiri's device in order to use the device in an application which requires specific electrode length.

Regarding claim 4, Ejiri teaches in figure 13 and related text the length of the second line unit is greater than a width of the electrode lines and less than the ordinary length.

Regarding claims 5, 8 and 10, AAPA teaches the first line unit and the second line unit each comprise a conductive layer and a hard mask layer, respectively, a spacer is formed on the inclined end in the long axis direction of the second line unit, wherein the electrode lines comprise one of word lines and bit lines. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the first line unit and the second line unit each with a conductive layer and a hard mask layer, respectively, to use a spacer on the inclined end in the long axis direction of the second line unit, and to use the electrode lines as one of word lines and bit lines in Ejiri's device in order to form the electrode lines in a conventional method using hard mask, in order to provide better protection to the electrode lines , and in order to use the device in an application which requires word lines or bit lines, respectively.

Regarding claims 6 and 7, Ejiri teaches a conductive layer comprises a material containing tungsten. It would have been obvious to a person of ordinary skill in

the art at the time the invention was made to use electrode lines comprising a material containing tungsten an a hard mask layer comprises a silicon nitride layer or a silicon oxynitride layer in Ejiri's device in order to provide better conductivity and insulation to the electrode lines.

Regarding claim 9, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the insulating plug of a material of which the spacer is formed in Ejiri's device in order to simplify the processing steps of making the device.

Response to Arguments

Applicant argue that Ejiri does not teach an upper surface of the second line unit being of uniform height above the substrate between the insulating plug and the inclined outer end.

Figure 13 of Ejiri clearly depicts an upper surface of the second line unit 18c being of uniform height above the substrate between the insulating plug and the inclined outer end.

Applicant argue that Ejiri does not teach a second line unit which includes an inclined outer end in the long axis direction, because the inclined end is at an intermediate location of the second line unit.

Claim 1 recites a second line unit which includes an inclined outer end in the long axis direction. The outer end portion of the second line unit in Ejiri's device is considered to include the inclined portion and the lower uniform portion (this in contrast to the middle raised portion). Therefore, part of the outer end portion of the second unit is inclined, as claimed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(571) 272-1660**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

O.N.
12/29/04

ORI NADAV
PRIMARY EXAMINER
TECHNOLOGY CENTER 2800